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Phenomena of Jupiter's Satellites observed with the 9½-inch Cooke Refractor.

1885.	Satellite.	Phenomena.		G.M.T. h	m	s	Remarks.
Apr. 5	I.	Tr. I.	First contact	9	33		Much cloud.
	I.	Sh. I.	Just within	10	34		Much cloud.
17	II.	Sh. I.	Bisection	8	21		Good sky.
			Inner contact	8	23		
	II.	Tr. E.	Inner contact	8	57		
			Bisection	8	59½		
			Outer contact	9	0		
	II.	Sh. E.	Inner contact	11	14		Not well seen.
18	III.	Sh. E.	Inner contact	8	35		
			Just off	8	37		
	IV.	Tr. E.	Inner contact	11	30		Satellite like a dark spot from 7 P.M. till egress.
25	III.	Sh. I.	Just within	9	4		Shadow looked small and dark. At 9.30 it was dark and larger.
26	II.	Ec. R.	First seen	8	59	23	Full brightness, $9^h\ 4^m$.
27	IV.	Ec. R.	First seen	8	35	39	
May 2	III.	Tr.	Ingress not seen				The satellite was dark during transit, but not black.
6	I.	Oc. D.	First contact	8	31		
13	IV.	Oc. D.	First contact	9	27		Fair definition.
			Bisection	9	29		
			Just gone	10	1		
	I.	Oc. D.	First contact	10	24		
			Bisection	10	26		
			Disappeared	10	28½		
	III.	Ec. R.	First seen	10	37	7	Full brightness, $10^h\ 41^m \pm$.
14	I.	Tr. E.	Inner contact	10	5		
			Half off	10	7		
			Outer contact	10	9		
20	III.	Oc. R.	First seen	9	30		Definition not good.
			Just off	9	32½		
	III.	Ec. D.	Fading	11	10		
			Half gone	11	12		
			Last seen	11	15		Or $11^h\ 14^m\ 46^s$.
26	II.	Sh. I.	Bisection	10	43½		Clouds pass. Planet low. Mr. Crossley at telescope.
			Just within	10	44½		
	II.	Tr. E.	Just off	10	6		Planet low.

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	Satellite.	Phenomena.		G.M.T. h m s	Remarks.
1885.					
May 30	IV.	Oc. R.	First seen	8 55	Very bad sky.
			Just off	8 57	
	I.	Sh. E.	Inner contact	9 37	
June 2	II.	Tr. I.	First contact	9 47	Cloudy.
1886.					
Apr. 2	II.	Oc. D.	First contact	9 19	Clouds pass.
4	III.	Tr. E.	Outer contact	9 21	
9	I.	Oc. D.	Outer contact	10 4	Good sky.
			Just gone	10 6	Transit of red spot, $10^h\ 15^m$.
	II.	Oc. D.	Outer contact	11 37	
			Bisection	11 39	
			Just gone	11 41	
11	II.	Tr. E.	Inner contact	8 45	Satellite invisible, mostly, during transit.
			Bisection	8 47	
			Outer contact	8 49	
	II.	Sh. E.	Inner contact	9 46	
	III.	Tr. I.	First contact	9 49	At $10^h\ 30^m$ the satellite was quite dark on the disc.
			Bisection	9 53	
			Inner contact	9 56	
May 18	I.	Ec. R.	First seen	11 13 18	
1889.					
Aug. 22	III.	Oc. R.	First seen	7 55½	Planet very low.
	I.	Sh. I.	Just within	8 15½	
28	II.	Ec. R.	First seen	9 18 31	Planet very low.
			Half out	9 20	
			Full	9 22	
29	III.	Oc. D.	Outer contact	8 43	
			Half gone	8 46	
			Just gone	8 48½	
	I.	Tr. I.	First contact	8 55	
			Bisection	8 56½	
			Inner contact	8 59	
Sept. 6	I.	Oc. D.	First contact	8 9	Planet very low; bad definition.
			Disappeared	8 13	
7	I.	Tr. E.	Inner contact	7 34½	Very bad definition.
			Just off	7 38	
1890.					
Sept. 7	II.	Sh. E.	Last seen	8 58	
27	I.	Ec. R.	First seen	7 38 59	Bad sky.

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Ephemeris for Physical Observations of Jupiter, 1891. By A. Marth.

Greenwich Noon	Angle of Position of ♃'s Axis. P	L−0.	Diff.	B	Corr. of log. Δ.	Light-time.	A−0.	β	Longitude of ♃'s Central Meridian. (877°·90) I.	(870°·27) II.	Corr. for Phase.	Apparent Diameter. Equat.	Phase.	Polar.
1891.	°	°		°		m	°	°	°	°	°	″	″	″
April 17	335·765	203·513	391	+1·005	−165	46·736	194·9068	+0·7930	216·99	32·64	+0·32	34·81	0·20	32·59
19	·714	203·904	386	1·026	168	46·540	195·0857	·8022	172·52	332·91	·34	34·95	·21	32·73
21	·665	204·290	380	1·046	171	46·339	195·2646	·8115	128·06	273·19	·36	35·10	·22	32·87
23	·618	204·670	374	1·067	174	46·133	195·4435	·8207	83·61	213·47	·37	35·26	·23	33·02
25	·572	205·044	368	1·087	177	45·924	195·6225	·8300	39·16	153·76	·39	35·42	·24	33·17
27	335·528	205·412	361	+1·108	−179	45·710	195·8015	+0·8392	354·72	94·06	+0·40	35·59	·25	33·32
29	·486	205·773	354	1·128	182	45·493	195·9805	·8484	310·29	34·37	·42	35·76	·26	33·48
May 1	·445	206·127	348	1·148	184	45·271	196·1596	·8576	265·87	334·69	·43	35·93	·27	33·64
3	·406	206·475	340	1·168	186	45·046	196·3387	·8669	221·46	275·02	·45	36·11	·28	33·81
5	·369	206·815	332	1·188	188	44·818	196·5178	·8761	177·06	215·36	·46	36·29	·29	33·98
7	335·333	207·147	325	+1·207	−190	44·586	196·6970	+0·8853	132·67	155·71	+0·48	36·48	·30	34·16
9	·299	207·472	318	1·227	191	44·351	196·8763	·8945	88·29	96·06	·49	36·68	·31	34·34
11	·266	207·790	309	1·246	192	44·113	197·0556	·9036	43·92	36·43	·50	36·88	·32	34·53
13	·235	208·099	301	1·265	194	43·872	197·2349	·9128	359·56	336·81	·51	37·08	·33	34·72
15	·206	208·400	292	1·284	195	43·629	197·4142	·9220	315·20	277·19	·53	37·28	·34	34·91
17	335·178	208·692	283	+1·303	−195	43·383	197·5935	+0·9311	270·86	217·59	+0·54	37·49	·35	35·11
19	·151	208·975	275	1·322	196	43·135	197·7729	·9403	226·53	158·00	·55	37·71	·36	35·31

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